

Far Eastern Entomologist

Дальневосточный энтомолог

Journal published by Far East Branch
of the Russian Entomological Society
and Laboratory of Entomology,
Institute of Biology and Soil Science,
Vladivostok

Number 318: 1-19

ISSN 1026-051X

August 2016

<http://urn:lsid:zoobank.org:pub:E61F8E7C-FF20-4AE8-972F-F82CCA93FA08>

REVISION OF SPECIES OF THE GENUS *ISMARUS* HALIDAY, 1835 (HYMENOPTERA: DIAPRIOIDEA: ISMARIDAE) OF THE RUSSIAN FAUNA

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A revision of the Palaearctic species of the genus *Ismarus* Haliday, 1835 is provided. Diagnosis of this genus is specified and three new species, *I. apicalis* sp. n., *I. multiporus* sp. n. and *I. spinalis* sp. n., are described and illustrated. The new synonymy is proposed: *Ismarus halidayi* Förster, 1850 = *Entomius longicornis* Thomson, 1858, **syn. n.** = *Ismarus mongolicus* Szabo, 1974, **syn. n.**; *Ismarus dorsiger* (Haliday, 1831) = *Ismarus moravicus* Ogloblin, 1925, **syn. n.** A key to the all Palaearctic species of *Ismarus* is provided. Monotypic genus *Szelenyoprioides* Szabo, 1974 described in the family Ismaridae is synonymized under *Spilomicrus* Westwood, 1832 (Diapriidae: Diapriinae); its type species is transferred in *Spilomicrus*, and new combination is proposed here, *Spilomicrus amedialis* (Szabo, 1974), **comb. n.**

KEY WORDS: Ismaridae, *Ismarus*, Diapriidae, *Szelenyoprioides*, taxonomy, new species, new synonymy, key, Palaearctic Region.

В. А. Коляда¹⁾, В. Г. Чемырева²⁾. Ревизия видов рода *Ismarus* Haliday, 1835 (Hymenoptera: Diaprioidea: Ismaridae) фауны России // Дальневосточный энтомолог. 2016. N 318. С. 1-19.

Проведена ревизия палеарктических видов рода *Ismarus* Haliday, 1835. Уточнен диагноз рода и описаны 3 новых для науки вида: *I. apicalis* sp. n., *I. multiporus* sp. n. *I. spinalis* sp. n. Предложена новая синонимия: *Ismarus halidayi* Förster, 1850 = *Entomius longicornis* Thomson, 1858, **syn. n.** = *Ismarus mongolicus* Szabo, 1974, **syn. n.**; *Ismarus dorsiger* (Haliday, 1831) = *Ismarus moravicus* Ogloblin, 1925, **syn. n.** Приведены определительные таблицы самцов и самок всех известных палеарктических видов рода *Ismarus*. Описанный в семействе Ismaridae монотипичный род *Szelenyioprioides* Szabo, 1974 сведен в синонимы к роду *Spilomicrus* Westwood, 1832 (Diapriidae: Diapriinae); а его типовой вид перенесен в *Spilomicrus* и предложена новая комбинация *Spilomicrus amedialis* (Szabo, 1974), **comb. n.**

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INTRODUCTION

Long time the genus *Ismarus* Haliday, 1835 was a type genus of the subfamily Ismarinae in the family Diapriidae (Nixon, 1957; Hellen, 1964; Masner, 1976; Johnson, 1992; Liu *et al.*, 2011). However, the recent research based on molecular and morphological evidences distinctly showed polyphyletic content of the family Diapriidae and Ismaridae obtained family status (Sharkey *et al.*, 2011).

World fauna of family Ismaridae consists of two genera, *Ismarus* Haliday, 1835 and *Szelenyioprioides* Szabo, 1974, with 33 species (Johnson, 1992; Liu *et al.*, 2011), nine of which are recorded in the Palaearctic Region (Johnson, 1992; Ventura *et al.*, 1997; Notton, 2007). However, a revision of the genus *Ismarus* as well as family Ismaridae in the Palaearctic Region has never been provided before. The recent reviews of the genus *Ismarus* were carried out by Masner (1976) for the Nearctic Region and by Liu *et al.* (2011) for the fauna of China.

Genus *Ismarus* has worldwide distribution and represents in each regions by relatively a few rare species some of them having wide distribution (Masner, 1976; Liu *et al.*, 2011). The members of this genus are the hyperparasitoids on the Dryinidae wasps (Chambers, 1955; 1981).

MATERIAL AND METHODS

Material for this study was collected in many localities of Russia and several neighboring countries (Estonia, Ukraine, Georgia, Azerbaijan, Kazakhstan, and Kyrgyzstan) by yellow pan traps, Malaise traps, and by net sweeping. The available

type material from the several museums were studied. The list of the Museum's type material from the several museums were studied. The list of the Museum's acronyms is followed: BMNH – the National History Museum, London, U.K.; CNCI – Canadian National Collection of Insects, Ottawa, Canada; HNHM – Hungarian Nature History Museum, Budapest, Hungary; NHRS – Swedish Museum of Nature History, Stockholm, Sweden; PIN – Paleontological Institute of the Russian Academy of Sciences, Moscow, Russia; ZISP – Zoological Institute of the Russian Academy of Sciences, St Petersburg, Russia; ZMUM – Zoological Museum of the Moscow State University, Moscow, Russia.

The morphological terminology and abbreviations follow Masner (1976) and the Hymenoptera Anatomy Ontology (Yoder *et al.*, 2010). Measurements of venation are shown on the Figs 15 and 16. The following abbreviations are used in the descriptions of morphology: A1–A13 – antennal segments; OOL – the shortest distance between posterior ocellus and compound eye; POL – the shortest distance between posterior ocelli; S, T – metasomal sternites and tergites respectively.

The following abbreviations for collectors are used: AP – A.G. Ponomorenko; AR – A.P. Rasnitsyn; DK – D.R. Kasparyan; MK – M.A. Kozlov; MM – M.B. Mostovskiy; SB – S.A. Belokobylskij; VK – V.A. Kolyada; VKv – V.V. Kostukov; VT – V.I. Tobias; VTn – V. A. Trjapitzin.

New records are marked by asterisk (*). The general distribution of species is given after Masner (1957, 1976), Kozlov (1978), Ventura *et al.* (1997) and Liu *et al.* (2011).

All photographs were obtained using a Leica M165 stereomicroscope equipped with a Leica DFC450 camera. Image stacking was performed with Helicon Focus 5.0.

Most part of the type material of new species is housed in the collection of ZISP, some paratypes are in the collection BMNH and PIN.

TAXONOMY

Family Ismaridae Thomson, 1859

Ismarini: Thomson, 1859: 377.

Ismarinae: Hellén, 1964: 4.

Ismaridae: Sharkey *et al.*, 2011: 21.

Nowadays the family Ismaridae combines only two genera, *Ismarus* Haliday, 1835 and *Szelenyoprioides* Szabo, 1974 (Johnson, 1992). The monotypic genus *Szelenyoprioides* Szabo, 1974 with type species *S. amedialis* Szabo, 1974, was described from Mongolia (Szabo, 1974). Megyaszi and Thuróczy (1998) discussed taxonomic positions of the taxa described by Szabo and observed that *Szelenyoprioides* belongs to *Spilomicrus* genera group in subfamily Diapriinae (Diapriidae). Our investigation of the holotype of *Szelenyoprioides amedialis* distinctly shows that *Szelenyoprioides* is junior synonym of *Spilomicrus*, therefore new synonymy and combination are proposed here: *Spilomicrus* Westwood, 1832 = *Szelenyoprioides* Szabo, 1974, **syn. n.**; *Szelenyoprioides amedialis* Szabo, 1974 = *Spilomicrus amedialis* (Szabo, 1974), **comb. n.** As the result, the family Ismaridae consists of the single genus *Ismarus* only.

Genus *Ismarus* Haliday, 1835

Ismarus Haliday, 1835: 467. Type species *Cinetus dorsiger* Haliday, 1831, by monotypy.

Entomia Herrich-Schaeffer, 1840: 127. Type species *Entomia campanulata* Herrich-Schaeffer, 1840, by monotypy.

Agonophorus Dahlbom, 1858: 289. Type species *Ismarus rugulosus* Förster, 1850, designated by Muesebeck (1972).

DIAGNOSIS. Small to medium-sized (1.5–3.5 mm) wasps. Body colour mainly dark, brownish to black, rarely pale yellow and only with a few darker areas. Head transverse in dorsal view. Female antenna 15-segmented, male antenna 14-segmented; male A4, rarely A3 and A4 with keels; antennae inserted low on face, only slightly above clypeus; antennal shelf not developed. Palpal formula 4–3 or 5–3. Notauli reduced to anterior pits; mesoscutal suprahumeral sulcus present as several pits to completely reduced. Scutellar pit crenulate; scutellum apically rounded or truncate. Basis of lateral subapical lobe of humeral complex of fore wing covered by tegula halfway. Petiole short, weakly elongated to transverse. Fore tibia of both sexes with single true spur and single false spur; hind tibia of female robust. Present tendency to obliteration of sutures between metasomal tergites. Cerci not inserted in depressions.

REMARKS. Name *Ismarus abdominalis* Marshall, 1874 is noted in the Catalog of the World species of Proctotrupoidea (Johnson, 1992). However, this name is *nomen nudum* that was incorrectly installed by Dalla Torre (1898).

Key to *Ismarus* species of the Palaearctic fauna

Females

1. Body mainly yellow except black mesoscutum, scutellum and ocelli (Fig. 1); mandibles yellow with brown teeth. Notauli and mesoscutal suprahumeral sulcus absent (Fig. 9) ***I. dorsiger*** (Haliday)
- Body mainly black, except pale top of metasoma (Figs 2, 5); mandibles entirely dark or dark with brown apical half. Notauli and mesoscutal suprahumeral sulcus present (Figs 8, 10, 11) 2
2. Scutellum and metasoma coriaceous and mat (Fig. 5) ***I. rugulosus*** Förster
- Scutellum and metasoma (except T6) smooth and shine 3
3. Mesopleuron with deep transverse striation (Fig. 2). Antenna entirely yellow; A7 to A14 elongate (Fig. 27) ***I. flavicornis*** (Thomson)
- Mesopleuron without transverse striation. Antenna at least partly dark (Figs 20, 21, 23, 24), if sometimes entirely yellow, then A7 to A14 subquadrate (Fig. 22) 4
4. T6 entirely finely reticulate (Fig. 7). A7–A14 subquadrate (Fig. 22) ***I. spinalis* sp. n.**
- T6 medially smooth. A7–A14 elongate (Figs 20–21, 23–24) 5
5. Mesoscutal suprahumeral sulcus with 6–7 pits (Fig. 11). Posterior half of S6 yellow (Fig. 6) ***I. multiporus* sp. n.**
- Mesoscutal suprahumeral sulcus with 1–2 pits (Figs 8, 10). Only margin of S6 yellow (Figs 3–4) 6

6. S6 more than twice longer than wide, laterally with dense pilosity (Fig. 4). A3 long, 2.6 times longer than A2 (Fig. 20) ***I. grandis*** Alekseev
 – S6 1.3 times longer than wide, laterally with scattered setae (Fig. 3). A3 short, 1.6 times longer than A2 (Figs 21, 23) 7
7. A5 3.0 times longer than wide (Fig. 23). Marginal vein 4.0 times longer than stigmal vein (Fig. 12). Only A15 of antenna dark (Fig. 23) ***I. apicalis* sp. n.**
 – A5 2.0 times longer than wide (Fig. 21). Marginal vein 2.5 times longer than stigmal vein (Fig. 13). Distal half of antenna dark (Fig. 21) ***I. halidayi*** Förster

Males

1. Tops of A3 and A4 with ventral thorns (Fig. 32); A5–A13 subquadrate (Fig. 35) .
 ***I. spinalis* sp. n.**
 – Tops of A3 and A4 without ventral thorns (Figs 28-31, 33). A5–A13 elongate (Fig. 28) 2
2. A3 long, 3.0 times longer than A2 (Fig. 29) ***I. grandis*** Alekseev
 – A3 short, 1.5–2.0 times longer than A2 (Figs 28, 30-31, 33-34) 3
3. Mandibles white. Notauli and mesoscutal suprahumeral sulcus absent (Fig. 9)
 ***I. dorsiger*** (Haliday)
 – Mandibles black. Notauli and mesoscutal suprahumeral sulcus present (Figs 8, 10-11) 4
4. Scutellum and metasoma sculptured, coriaceous-reticulate and mat (Fig. 5)
 ***I. rugulosus*** Förster
 – Scutellum and metasoma (except T6) smooth and shine 5
5. Mesopleuron with deep transverse striation (Fig. 2) ***I. flavicornis*** (Thomson)
 – Mesopleuron without deep transverse striation 6
6. Mesoscutal suprahumeral sulcus with 6–7 pits (Fig. 11) ***I. multiporus* sp. n.**
 – Mesoscutal suprahumeral sulcus with 1–2 pits (Figs 8, 10) 7
7. A4 1.1 times longer than A3 (Fig. 34); A1 to A11 yellow, A12–A14 darkened (Fig. 34) ***I. apicalis* sp. n.**
 – A4 1.5 times longer than A3 (Fig. 31); antennae mainly dark except 2–3 basal antennomeres ***I. halidayi*** Förster

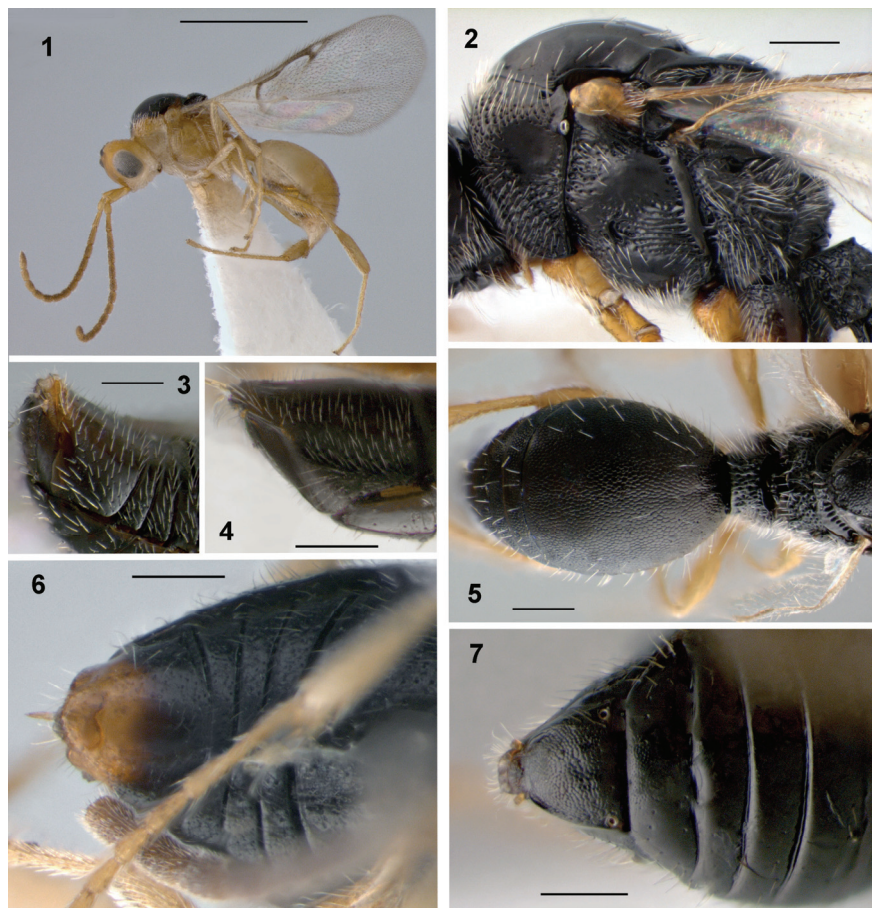
***Ismarus apicalis* Kolyada et Chemyreva, sp. nov.**

Figs 8, 12, 23, 34

TYPE MATERIAL. Holotype, ♀, **Russia**: Primorskii krai, vicinity of Spassk-Dal'niy, 1–6.VII 1995 (S. Belokobyl'skij) (ZISP). Paratypes. Primorskii krai: vicinity of Spassk-Dal'niy, 30.VI 1993 and 1–11.VII 1995 (SB), 3♀ (ZISP, BMNH); 35 km NE of Spassk-Dal'niy, Vasil'kovka, 13.VII 1993 (SB), 1♀ (ZISP); 20 km SE of Spassk-Dal'niy, Evseevka, 13.VII 1995 (SB), 1♀ (ZISP); 20 km SE of Spassk-Dal'niy, Siniy Ridge, 7–8.VII 2001 (SB), 1♀ (ZISP); 15 km NE of Spassk-Dal'niy, 7.VII 1993 (SB), 1♀ (ZISP); 10 km SW of Partizansk, 12.VII 1996 (SB), 1♀ (ZISP); 15 km NW of Partizansk, 28.VI 1996, 7–8.VII 1996 (SB), 2♂ (ZISP,

BMNH); Ussuriysk Nature Reserve, 15.VIII 1987 (VKv), 2♀ (ZISP); Barabash-Levada, 22.VI 1972 (MK), 1♀, 1♂ (ZISP); 'Kedrovaya Pad' Nature Reserve, 5.VII 1982 (I. Kerzhner), 1♀ (PIN); 20 km SW of Putsilovka, 25–28.VI 1993 (SB), 1♀ (ZISP); Suvorovo, 9.VI 1972 (AP), 1♀ (PIN); Sakhalinskaya oblast: Kunashir Island, volcano Golovnina, 24–26.VII 1973 (DK), 1♀ (ZISP); Kunashir Island, vicinity of Sernovodsk, 23.VII 1991 (SB), 1♂ (ZISP).

ETYMOLOGY. The name refers to constantly darkened apical segment of female antenna.



Figs 1–7. 1 – *Ismarus dorsiger*, whole insect; 2 – *I. flavicornis*, mesosoma, lateral view; 3 – *I. halidayi*, metasoma, last segments, lateral view; 4 – *I. grandis*, metasoma, last segments, lateral view; 5 – *I. rugulosus*, mesosoma and metasoma, dorsal view; 6 – *I. multiporus* **sp. n.**, distal part of metasoma, ventral view; 7 – *I. spinalis* **sp. n.**, distal part of metasoma, dorsal view. Scale bar: 1 – 1 mm, 2–7 – 0.2 mm.

DIAGNOSIS. The new species is similar to *Ismarus halidayi* and *I. spinalis* sp. n. differs from *I. halidayi* by the characters indicated in the key (see couplet 7 for female and 8 for male), and from *I. spinalis* by the antennal structure and venation: male A3 and A4 without keels and ventral thorns (A3 and A4 with keels and ventral thorns (Fig. 34) in *I. spinalis*); A7–A13 distinctly elongate in both sex (A7–A13 quadrate to subquadrate in *I. spinalis*); female A15 and male A12–A14 dark brown (female antennae entirely yellow and male entirely pale brown in *I. spinalis*); marginal vein 4.0 times longer than stigmal vein (3.0 times longer than stigmal vein in *I. spinalis*).

DESCRIPTION. Female (holotype). Body length 3.1 mm; fore wing length 2.6 mm; antenna length 2.0 mm.

Colour. Body black; legs, except hind coxae, tegulae, labrum, apical part of mandibles and antenna except apical segment yellow; apical segment of antenna reddish brown; hind coxae yellow at apex and darkened at base; veins yellowish brown; T7 reddish brown.

Head. Head in dorsal view transverse (17 : 9); OOL shorter than POL (5 : 7) (Fig. 8); frons bare; face around and below toruli densely setose; clypeus evenly convex, very transverse; epistomal sulcus and tentorial pits distinct; eye bare, 3.0 times as high as malar space. A1 subcylindrical, with apical rim simple; pedicel slender basally and broad apically; ratios of length to width of all antennal segments in dorsal view: 20 : 8; 10 : 6; 16 : 5; 14 : 5; 13 : 6; 12 : 6; 10 : 7; 10 : 7; 10 : 7; 10 : 7; 10 : 7; 10 : 7; 16 : 7 (Fig. 23).

Mesosoma. Mesosoma in dorsal view narrower than head (27 : 34); pronotum rugose-punctate and setose; small central area of lateral side of pronotum smooth; mesoscutum smooth and convex, with some scattered setae near notauli; notauli present only anteriorly, pit-shaped; mesoscutal suprahumeral sulcus absent; humeral sulcus deep and crenulate; anterior scutellar pit slightly crenulate at bottom, with low median carina; scutellum smooth, rounded, with shallow depression apically and crenulate along margin; propodeum densely rugose-punctate and pubescent, with transverse and longitudinal carinae; mesopleuron punctate and setose on ventral and lateral sides in anterior part, smooth and bare medially; mesepimeral sulcus distinct; metapleuron coarsely sculptured and covered by long setae. Fore and middle legs slender; hind tibia incrassate.

Fore wing. Radial cell close, distinctly shorter than length of marginal vein (3 : 4), 3.0 times longer than its width; distant between marginal vein and beginning of basal vein shorter than length of marginal vein (11 : 16) (Fig. 12).

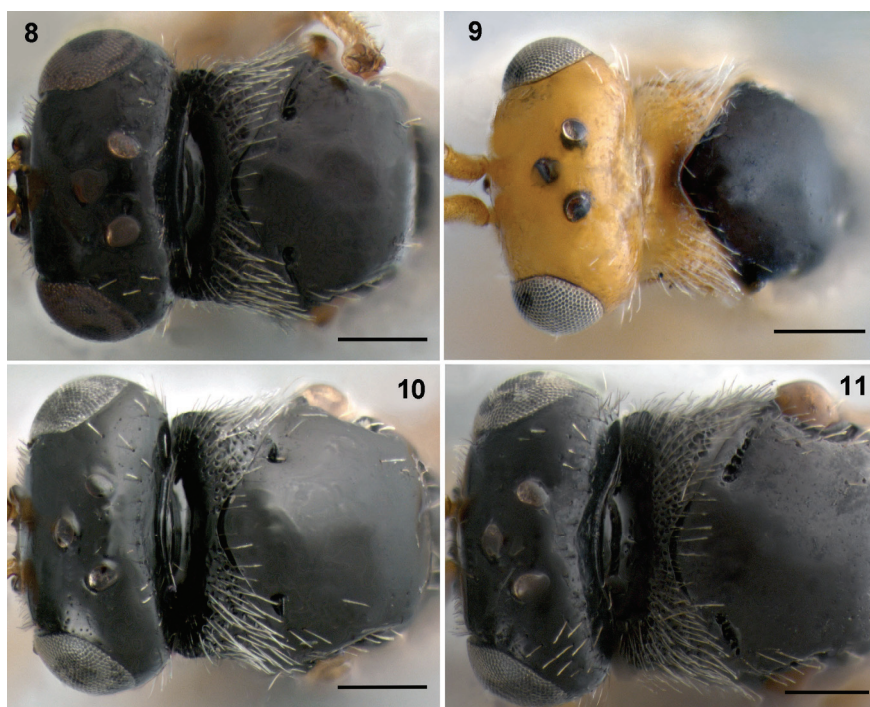
Metasoma. Petiole transverse (12 : 9), coarsely rugose-sculptured; T2–T6 covered by scattered micropunctate and short setae; median furrow of T2 extending to 0.6 of its length; length of T3–T6 together shorter than length of T2 (3 : 4); T7 with dense micropuncture and pubescence; sutures between tergites complete and well impressed; sternites densely punctate and pubescent.

VARIATION. Body length 2.1–2.9 mm. Antennae 0.65–0.95 times as long as body; female A15 entirely dark brown or darkened apically only; S6 dark brown to pale brown apically.

MALE. Body length 2.0–2.7 mm. Similar to female, but differs in antennal structures. Antenna 0.5–1.0 times as long as body, filiform, yellow with darkened one to four apical antennomeres; keel developed on A4 from base to 0.85–0.95 of segment length (Fig. 34); A3 = A4 or A4 distinctly longer than A3. Ratios of length to width of antennal segments in dorsal view: 10 : 4; 5 : 3.5; 6 : 3; 8 : 3.5; 6 : 4; 6 : 4; 5 : 4; 5 : 4; 5 : 3.5; 5 : 3.5; 5 : 3.5; 5 : 3; 5 : 3; 7 : 3.

HOST. Unknown.

DISTRIBUTION. Far East of Russia.



Figs 8–11. Head and anterior part of mesosoma, dorsal view. 8 – *I. apicalis* **sp. n.**; 9 – *I. dorsiger*; 10 – *I. halidayi*; 11 – *I. multiporus* **sp. n.** Scale bar – 0.2 mm.

***Ismarus dorsiger* (Haliday, 1831)**

Figs 1, 9, 19, 25

Cinetus dorsiger Haliday, 1831: 380.

Ismarus dorsiger: Liu et al., 2011: 56.

Ismarus moravicus Ogloblin, 1925: 50, **syn. n.**

MATERIAL EXAMINED (11♀). **Russia**: Novgorodskaya oblast, 20 km NW of Pestovo, 4–17.VI 1998 (VT), 3♀; Kirovskaya oblast, Bolsheromanovo, 9.VIII

1994 (VK), 1♀; Moskovskaya oblast: Mamontovka, 19.VII 1986 (VTr), 2♀; Tishkovo, Pushkin Distr., 20.VIII 1976 (VTr), 1♀; Malakhovka, 23.VII 1999 (MM), 1♀; Crimea: Chatyrdag Nature Reserve, 7.VIII.1971 (DK), 3♀.

VARIATION. Body length 1.7–2.0 mm. Body, except scutellum and mesonotum, white to yellow; venation yellow to brown. Marginal vein 1.8–2.2 times as long as radial cell; A4 weakly longer than A3 or equal to it.

DISCUSSION. The search of the type material of *Ismarus moravicus* Ogloblin, 1925 have been unsuccessful and here this name is proposed as synonym of *I. dorsiger* on the base of the original description. Ogloblin (1925) gave a detailed description of the species and compared it with *I. dorsiger*. He used the following diagnostic characters for diagnosis: petiole rugulose, basal cell of the hind wing absent, and the proportions of the antennal segments different. All these characters are satisfied to the range of variability in *I. dorsiger*: the venation of hind wing very often indistinguishable and petiole can be almost smooth to rugulose. At the same time the other important features, colour pattern, mesonotum without notauli and mesoscutal suprahumeral sulcus, are the same as in *I. dorsiger*.

DISTRIBUTION. Ireland, England, Spain, Czech Republic, *Russia (European part), China.

***Ismarus flavicornis* (Thomson, 1858)**

Figs 2, 15, 27, 28

Entomius flavicornis Thomson, 1858: 379.

TYPE MATERIAL. Lectotype (here designated), ♀, **Sweden**: “Sm” [Småland]; “Bhn” [collector C.H. Boheman]; “NHRS-HEVA 000003606”; “*Ismarus flavicornis* (Thomson, 1858), Chemyreva det. 2016” (NHRS).

ADDITIONAL MATERIAL EXAMINED (32♀, 4♂). **Estonia**: 4.VI 1966 (O. Kovalev), 1♀. **Ukraine**: Melitopol'skaya oblast, Berdyanskoe, 24.V 1974 (DK), 1♂. **Russia**: Leningradskaya oblast, Murino, 12.VI 1983 (SB), 2♀; Novgorodskaya oblast, 20 km NW of Pestovo, Tychkino, 21–22.VI 1994 (VT), 1♀; Moskovskaya oblast: Rublevskiy Forest, 1–15.VI 2004 (VK), 3♀, 1♂; Narofominskiy Distr., Kamenka, 10.VI 1967 and 23.VI 1968 (AP), 15♀; Narofominskiy Distr., Ozhigovo Station, 20.V 2000 (V. Gokhman), 1♀; Pushkinskiy Distr., Tishkovo, 24.VII 1974, 11.VII 1978 and 15.VII 1979 (AR), 4♀; Vostryakovo, 9.VII 1978 (AR), 1♀; Losinyy Ostrov, 13.VI 1982 (AR), 1♀; Crimea: Bakhchisaray District, Prokhladnoe, 16.VI 1995 (VK), 1♀; Karadag Nature Reserve, 3.VI 1990 (DK), 1♂; Krasnodarskii krai, Sochi, Lazarevskoe, 20–24.V 1973 (VT), 1♀; Khabarovskii krai, Khekhtsir, 8.VI 1983 and 13.VI 1985 (DK), 2♀.

VARIATION. Body length 2.3–3.0 mm. Mandibles entirely dark to pale brown in apical half; male antennae pale brown to dark brown; metasoma dark brown to black; T6 entirely smooth or weakly punctured laterally.

DISTRIBUTION. Canada, USA, Ireland, England, Sweden, Czech Republic, Switzerland, Austria, Finland, *Estonia, *Ukraine, *Russia (European part, Far East).

***Ismarus grandis* Alekseev, 1978**

Figs 4, 14, 20, 29

Ismarus grandis Alekseev, 1978: 1104.

TYPE MATERIAL. Holotype, ♀, **Russia**: “USSR, Primorskiy kray, [Kavalerovo District] Suvorovo, 20.VI 1972, A. Ponomorenko leg.” (ZMUM).

ADDITIONAL MATERIAL EXAMINED (15♀, 16♂). **Russia**: Khabarovskii krai: Khekhtsir, 29.V, 11.VI and 4.VIII 1983 (DK), 1♀, 2♂; 20 km S of Bikin, Boytsovo, 25–26.V 1993 (SB), 2♂; Primorskii krai: Anisimovka, 5–9.VI 1993 and 27.VI 1996 (SB), 4♀; 30 km SE of Ussuriysk, Ussuriysk Nature Reserve, 10–11.VI 1993 (SB), 1♀, 3♂; vicinity of Ussuriysk, 24–29.VI 1981 (DK), 1♂; 15 km NWW of Partizansk, 28.VI.1996 (SB), 2♀; vicinity of Vladivostok, 27.V 1990 and 26.VI 2009 (SB), 2♀, 2♂; 20 km SW of Putsilovka, 25–28.VI 1993 (SB), 2♀; 5 km SE of Lesozovodsk, 24.VI 1993 (SB), 3♂; 30 km NE of Chuguevka, 1.VI.1993 (SB), 3♂; Sakhalinskaya oblast: Kuril Islands, Kunashir Island, Alekhino, 1.VIII 1973 (DK), 1♀; Kunashir Island, Tret'yakovo, 30.VII 2011 (E. Tselikh & D. Rachin), 1♀.

VARIATION. Body length 2.5–4.0 mm. Female A12–A15 to A9–A15 darkened. Male A1 as long as A3 or distinctly shorter; A3 as long as A4 or shorter; A1 darkened dorsally to entirely pale brown. Anterior scutellar pits crenulate at bottom to entirely smooth, with distinct to very low or indistinct median carina, 0.25–0.40 times as long as scutellum. Marginal vein as long as radial cell or weakly shorter. Median furrow of T2 extending to 0.5–0.8 of T2 length; S6 fully dark to pale apically.

DISTRIBUTION. Russia (Primorskii krai, *Khabarovskii krai, *Kuril Islands).

***Ismarus halidayi* Förster, 1850**

Figs 3, 10, 13, 21, 31

Ismarus halidayi Förster, 1850: 285; Liu et al., 2011: 57.

Entomia companulatus Herrich-Schäffer, 1840: 127 (nomen oblitum).

Entomius longicornis Thomson, 1858: 378, **syn. n.**

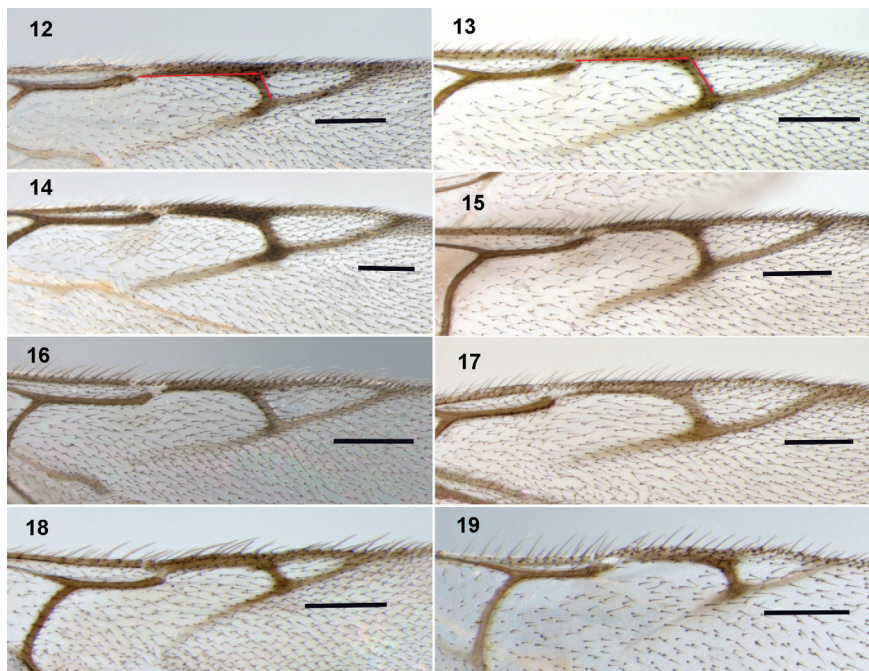
Ismarus mongolicus Szabo, 1974: 353, **syn. n.**

TYPE MATERIAL. Lectotype of *Ismarus longicornis* (here designated), ♀, **Sweden**: “Sbg” [Sövdeborg]; “Rh” [collector Carl David Emmanuel Roth]; “NHRS-HEVA 000003605”; “*Ismarus longicornis* (Thomson, 1858), Chemyreva det. 2016” (NHRS). Holotype of *Ismarus mongolicus*, ♀, “**Mongolia**: Central aimak Tosgoni ovoo, 5–10 km N von Ulan-Baator, 1500–1700 m. Exp. Dr. Z. Kaszab, 1967”; “*Ismarus mongolicus* Szabo, 1974”.

ADDITIONAL MATERIAL EXAMINED (46♀, 17♂). **Russia**: Leningradskaya oblast, St Petersburg, Levashovo, 6.VII 1975 (V.Kv), 1♀; Yaroslavskaia oblast, Yaroslavl', 7.V 1899 (Kokujev), 1♀, 3♂; Moskovskaya oblast, Moscow, Bitsevo Park, 11.VII 1994 (VK), 1♀; Moscow, Losinyy Ostrov, 27.VI 1978 and 23.V 1982 (AR), 2♀, 1♂; same locality, 14.V 1996, (MM), 1♀; Rublevka Forest, 1–15.VI 2004 (VK), 3♂; Samarskaya oblast, Zhiguli Nature Reserve, 17–18.VI 2011

(V. Chemyreva), 1♀; Saratovskaya oblast, Saratov, 9.VI 1899 (M. Katkov), 2♀; Krasnodarskii krai, Sochi, Lasorevskoe (VT), 2♀; Orenburgskaya oblast, Sakmara River, 3.VI 1989 (V. Zherikhin & I. Sukacheva), 1♀, 1♂. Krasnoyarskii krai, Krasniyarsk, 27.VII 1988 (DK), 1♀. Yakutia, 50 km SW of Yakutsk, 3.VII 1970 (DK), 1♀. Khabarovskii krai, Boytsovo, 25–26.V.1993 (SB), 1♂. Primorskii krai: Vladivostok, 27.V 1990 (SB), 2♀; vicinity of Spassk-Dal'niy, 4–6.VII 1990, 1–13.VII 1995, 21–26.VI 2003 and 13–17.VII 2006 (SB), 17♀, 2♂; 15 km NW of Partizansk, 7–8.VII 1996 (SB), 2♀; Ussuriysk Nature Reserve, 30.V 1990 and 2–3.VIII 1991 (SB), 2♀, 1♂; same locality, 15.VIII 1987 (VKv), 1♂; same locality, 24–29.VI 1981 (DK), 1♀; Sakhalinskaya oblast, Uturup Island, 18.VIII 1996, 29–30.VII 1997 and 7.VIII 2000 (A. Leley), 5♀. **Georgia**: Kazbek, 18.VIII 1982 (Dbar), 1♀. **Azərbaycan**: Lenkoran', 22–26.IV 1971 (VT), 1♂; 27 km N from Shemakhi, 22.V 1972 (DK), 1♂.

VARIATION. Body length 1.8–2.8 mm. Female A1–A3 to A1–A10 yellowish brown or antennae entirely pale brown; A4 as long as A3 or longer; A3 1.5–1.8 times as long as A2, A5 1.2–1.6 times as long as of A4. Male antennae entirely yellowish brown or A1–A3 yellow and following antennomeres dark brown. Mandibles entirely black or its apical half reddish brown; scutellum finely pointed to smooth; radial cell 0.89–1.15 times as long as marginal vein.



Figs 12–19. Forewing, venation. 12 – *I. apicalis* **sp. n.**; 13 – *I. halidayi*; 14 – *I. grandis*; 15 – *I. flavicornis*; 16 – *I. multiporus* **sp. n.**; 17 – *I. spinalis* **sp. n.**; 18 – *I. rugulosus*; 19 – *I. dorsiger*. Scale bar – 0.2 mm.

DISTRIBUTION. Canada, USA, Scotland, England, Sweden, Czech Republic, Finland, *Azerbaijan, *Georgia, Russia (European part, *Siberia, *Far East), China.

DISCUSSION. The type material of *Entomia companulatus* Herrich-Schäffer, 1840 is possibly lost. Masner (1976) treated *E. companulatus* as synonym of *I. halidayi* and we are here followed his decision.

***Ismarus multiporus* Kolyada et Chemyreva, sp. n.**

Figs 6, 11, 16, 24, 33

TYPE MATERIAL. Holotype, ♀, **Russia**: Primorskii krai, Vladivostok, 9–10.VIII 2003 (S. Belokobylskij) (ZISP). Paratypes. **Russia**: Khabarovskii krai, Khekhtsir, 31.VII 1983 (DK), 1♂ (ZISP); Primorskii krai: Vladivostok, 9–10.VIII 2003 (SB), 1♀ (ZISP); vicinity of Spassk-Dal'niy, 4–6.VII 1993 (SB), 1♀ (ZISP); Gornotayozhnoe, 17–23.VII 2003 (M. Michaylovskaya), 1♀, 1♂ (BMNH); 10 km E of Partizansk, 21.VI 1990 (SB), 1♂ (ZISP); 128 km SSE of Dal'nerechensk, Pozhiga, 20–22.VI 1983 (DK), 1♀ (ZISP); 15 km SSW of Nezhino, 18–19.VII 1993 (SB), 1♀ (ZISP); Sakhalinskaya oblast, Kunashir Island, Tret'yakovo, 9–10.VIII 1979 (DK), 1♀ (ZISP).

ETYMOLOGY. The name refers to multiporous state of mesoscutal suprahumeral sulcus.

DIAGNOSIS. The new species can be differentiated from all Palaearctic *Ismarus* species by the mesoscutal suprahumeral sulcus with six or seven pits (Fig. 11). *Ismarus multiporus* sp. n. similar to *I. halidayi*, but differs by having T7 yellow to reddish brown or dark brown (T7 black in *I. halidayi*); T6 equal or almost equal to T5 (T6 1.5 times longer than T5 in *I. halidayi*); posterior half of S6 yellow (posterior margin of S6 brown in *I. halidayi*); female apical antennomeres pale, A3 and A4 dark brown and A3 twice longer than A2 (apical antennomeres darkened, A3 and A4 yellow, and A3 1.0–1.5 times as long as A2 in *I. halidayi*), male A3 dark brown, equal to A4 and twice longer than A2 (male A3 yellow, distinctly shorter than A4 and 1.0–1.2 times as long as A2 in *I. halidayi*).

DESCRIPTION. Female (holotype). Body length 3.0 mm; fore wing length 2.7 mm; antennae length 2.7 mm.

Colour. Body black; legs mainly (except coxae and tegulae) yellow; A1 and A2, labrum and apical part of mandibles reddish brown; A3–A15 brown; coxae pale at apex and darkened at base; venation yellowish brown.

Head. Head in dorsal view transverse (35 : 16); vertex abruptly sloping behind ocelli; temple narrowed behind eye; OOL shorter than POL (2 : 3); frons bare; face around and below toruli densely setose; clypeus evenly convex, very transverse; epistomal sulcus and tentorial pits distinct; eye bare, its height 2.7 times malar space. A1 subcylindrical, with apical rim simple; pedicel slender basally and broad apically; ratios of length to width of antennomeres in dorsal view: 20 : 5; 9 : 5; 15 : 4; 14 : 4; 10 : 4; 9 : 4.5; 9 : 5; 8 : 5; 9 : 5; 9 : 5; 9 : 5; 9 : 5; 8 : 5; 8 : 5; 12 : 5 (Fig. 24).

Mesosoma. Mesosoma in dorsal view narrower than head (28 : 35); pronotum rugose-punctate and setose; small central area of lateral side of pronotum smooth;

mesoscutum smooth and convex, with some scattered setae near notauli; notauli present only anteriorly as pit; mesoscutal suprahumeral sulcus and notauli together forming long row of pits (Fig. 11); humeral sulcus deep and crenulate; anterior scutellar pit slightly crenulate at bottom, without median carina; scutellum smooth, rounded, with shallow depression apically and crenulate along margin; propodeum



Figs 23–30. Female antennae. 20 – *I. grandis*; 21 – *I. halidayi*; 22 – *I. spinalis* **sp. n.**; 23 – *I. apicalis* **sp. n.**; 24 – *I. multiporus* **sp. n.**; 25 – *I. dorsiger*; 26 – *I. rugulosus*; 27 – *I. flavicornis*. Scale bar – 0.25 mm.

densely rugose-punctate and pubescent, with transverse and longitudinal carinae; mesopleuron punctate and setose on ventral and lateral sides in anterior part, smooth and bare medially; mesepimeral sulcus distinct; metapleuron coarsely sculptured and covered long setae. Fore and middle legs slender; hind tibia incrassate.

Fore wing. Radial cell close, longer than marginal vein (5 : 4) and longer than its width (10 : 3); distance between marginal vein and beginning of basal vein equal to marginal vein (Fig. 16).

Metasoma. Petiole transverse (13 : 8), rugose-sculptured with longitudinal carinae on sides; T2–T6 covered by scattered micropuncture and setae; median furrow of T2 extending to 0.8 of its length; length of T3–T6 together shorter than length of T2 (2 : 3); T7 reddish brown with dense micropuncture and pubescence; sutures between tergites complete and well impressed; sternites densely punctate and pubescent.

VARIATION. Body length 2.1–2.9 mm. A3–A15 dark brown to antenna pale apically; anterior scutellar pits strongly crenulate at bottom to weakly sculptured; T7 dark brown to entirely yellow.

MALE. Body length 1.5–2.7 mm. Similar to female, but differs in antennal structures. Antenna filiform, dark brown; keels developed on A4 from base to apex of segment (Fig. 33); A1 and A2 yellowish brown and darkened dorsally to fully as dark as A3–A15. Ratios of length to width of antennal segments in dorsal view: 15 : 5; 7 : 4.5; 13 : 4; 11 : 4; 8 : 4; 7 : 4.5; 7 : 4.5; 7 : 5; 7 : 5; 7 : 5; 7 : 5; 7 : 5; 10 : 5.

HOST. Unknown.

DISTRIBUTION. Russian Far East (Khabarovskii krai, Primorskii krai, Kuril Islands).

***Ismarus rugulosus* Förster, 1850**

Figs 5, 18, 26, 30

Ismarus rugulosus Förster, 1850: 284.

MATERIAL EXAMINED (32♀, 2♂). **Ukraine:** Kievskaya oblast, Irpen', 31.VIII 1980 (A. Kotenko), 1♀; Khersonskaya oblast, Askania-Nova Nature Reserve, 19.VI 1962 (E. Sugonyaev), 3♀. **Russia:** Novgorodskaya oblast, 20 km NW of Pestovo, 10.VII 1995 and VII 1990 (VT), 2♀; Kirovskaya oblast, Bolsheromanovo, 4–16.VIII 1994 (VK), 2♀; Moskovskaya oblast, Malakhovka, 26.VII.1994 (MM), 2♀; Chelyabinskaya oblast, Il'menskiy Nature Reserve, 15.VII 1958 (VT), 1♂; Sverdlovskaya oblast, Kushvinskiy Distr., 4.VII 1975 (Potapova), 1♀. **Kazakhstan:** Karagandinskaya oblast, river Taldy-Manaka, 1.VI 1959 (VT), 1♀; Vostochno-Kazakhstanskaya oblast, vicinity of Makanchi, Mt. Zhanauly, 2.VII 1962 (VT), 5♀, 1♂; Morolika, 11.VII 1973 (MK), 1♀; SW Altay, 20 km of Nikitinka Village, 23–27.VI 1973 (MK), 1♀; Saur Ridge, 26.VI 1965 (I. Sukacheva), 1♀; Tarbagatay Ridge, vicinity of Staropyatigorsk, 1–2.VII 1962 (VT), 6♀. **Kyrgyzstan:** vicinity of Nanay Village, 27.V 1963 (VT), 1♀.

VARIATION. Body length 1.9–2.8 mm. Female A1 equal to A4 or distinctly longer than it. Anterior scutellar pits 0.25–0.40 times as long as scutellum with numerous longitudinal carinae or with irregular crenulation at bottom and low median carina. Mesopleuron entirely sculptured to smooth at medial area. Marginal vein of fore wing 1.2–2.1 times as long as radial cell.

DISTRIBUTION. Canada, USA, Ireland, England, France, Germany, Italy, Sweden, Czech Republic, Slovakia, Finland, Ukraine, Russia (European part, *Urals), *Kazakhstan, *Kyrgyzstan.

***Ismarus spinalis* Kolyada et Chemyreva, sp. n.**

Figs 7, 17, 22, 32, 35

TYPE MATERIAL. Holotype, ♀, **Russia**: Primorskii krai, vicinity of Spassk-Dal'niy, 4–6.VII 1993 (S. Belokobylskij) (ZISP). Paratypes. **Russia**: Leningradskaya oblast: Murino, 12.VI.1983 (SB), 1♂ (ZISP); Pushkin, 20.VI 1973 (DK), 1♂ (ZISP); same locality, 3.VII 1973 (Kuslitskiy), 1♂ (ZISP); Moskovskaya oblast: Moscow, Bitsa Park, mixed forest, 23.VI 1999 (VK), 2♂ (ZISP, BMNH); Moscow, Vostriakovo, 9.VII 1978 (AR), 1♀ (PIN); Narofominsk Distr., Kamenka, 10.VI 1967 and 23.VI 1968 (AP), 1♀, 1♂ (PIN); Tishkovskoye storage reservoir, 11.VII 1979 (AR), 3♀ (ZISP, BMNH); Voronezhskaya oblast, Khoper Nature Reserve, 1–7.VII 1977 (VT), 2♀ (ZISP). Permskaya oblast, Kamenka, 18.VI 1962 (AP), 1♀ (ZISP). Buryatia, estuary of Temnik River, vicinity of Selendum, 25.VI 1971 (DK), 1♀ (ZISP). Zabaikalskii krai, Baley, 18.VII 1971 (DK), 1♂ (ZISP). Evreyskaya AO, Londoko, 1–4.VIII 1981 (DK), 1♀ (ZISP). Khabarovskii krai: Khekhtsir, 30.VII 1983 (DK), 1♀ (ZISP); Boronezhskie Sopki, 1.VII 1985 (DK), 1♂ (ZISP). Primorskii krai: vicinity of Spassk-Dal'niy, 6–14.VI 1990, 30.VI, 4–6.VII and 5–7.VIII 1993, 1–6 and 8–16.VII 1995, 17–21.VI 1996 (SB), 17♀, 6♂ (ZISP, BMNH, CNCI); 30 km E of Spassk-Dal'niy, 26–27.VI 1985 (DK), 4♀, 38♂ (ZISP, CNCI); 35 km NE of Spassk-Dal'niy, Vasil'kovka, 13.VII 1993 (SB), 1♀; 15 km NE of Spassk-Dal'niy, Konstantinovka, 7.VII 1995 (SB), 4♀ (ZISP); 20 km SE of Spassk-Dal'niy, Evseevka, 13.VII 1993 (SB), 1♀ (ZISP); Ussuryisk Nature Reserve, 15.VIII 1987 (VKv), 2♀ (ZISP); 20 km SE of Ussuryisk, 18–26.VII 1996 (SB), 1♀ (ZISP); 30 km SE of Ussuryisk, 10–11.VII 1993 (SB), 1♀ (ZISP); 20 km NNE of Partizansk, 2–10.VII 1996 (SB), 2♀ (ZISP); 10 km E of Partizansk, Frolovka, 21.VI 1990 (SB), 1♀, 1♂ (ZISP); 20 km SE of Putsilovka, 25–28.VI 1993 (SB), 3♀, 3♂ (ZISP); Shkotovo Distr., Peyshula (= Suvorovka), 24.VI 1972 (Kuslitskiy), 1♂ (ZISP); Shkotovo Distr., Kangauz (= Anisimovka), VII 1972 (Kuslitskiy), 1♂ (ZISP); Kovalerovo Distr., Suvorovo, 9.VII 1972 (V. Zherikhin), 1♀ (PIN); north of Primorskii krai, 40 km from estuary of Boshaya Svetlovodnaya River, 16.VIII 1976 (V. Zherikhin), 1♀ (PIN). Kazakhstan: Vostochno-Kazakhstanskaya oblast, 25 km of Ust'-Kamenogorsk, VII 1973 (MK), 1♀ (ZISP).

ETYMOLOGY. The name derived from Latin “spinus” and refers to thorns on the tops of male A3 and A4.

DIAGNOSIS. The new species is similar to *Ismarus flavicornis* but differs from it in having female antennae robust (distinctly slender in *I. flavicornis*), mesopleuron smooth medially (with deep transverse striate sculpture in *I. flavicornis*), T6 entirely with dense micropunctate sculpture (smooth at last medially in *I. flavicornis*).



Figs 28–35. Male antennae. 28 – *I. flavicornis*; 29 – *I. grandis*; 30 – *I. rugulosus*; 31 – *I. halidayi*; 32, 35 – *I. spinalis* sp. n.; 33 – *I. multiporus* sp. n.; 34 – *I. apicalis* sp. n. 28–33 – A2–A5 segments; 34, 35 – whole antennae. Scale bar – 0.2 mm.

DESCRIPTION. Female (holotype). Body length 3.0 mm; fore wing length 2.8 mm; antenna length 2.0 mm.

Colour. Body black; legs except coxae, tegulae, labrum and all antenomeres yellow; apical part of mandibles reddish brown; coxae pale at apex and darkened basally; venation yellowish brown.

Head. Head in dorsal view transverse (35 : 20); OOL shorter than POL (6 : 7); eye height 3.0 times malar space; frons bare; face around and below toruli densely setose; clypeus evenly convex, strongly transverse; epistomal sulcus and tentorial pits distinct; eye bare, its height 2.7 times malar space. A1 subcylindrical, with apical rim simple; A2 slender basally and broad apically; ratios of length to width of antennal segments in dorsal view: 24 : 8; 12 : 7; 16 : 5; 14 : 6; 10 : 6; 10 : 7; 8 : 8; 8 : 8; 8 : 8; 8 : 8; 8 : 8; 8 : 8; 16 : 8 (Fig. 22).

Mesosoma. Mesosoma in dorsal view narrower than head (30 : 35); pronotum rugose-punctate and setose; small central area of lateral side of pronotum smooth; mesoscutum smooth and convex, with some scattered setae near notauli; notauli present only anteriorly, pit-shaped; mesoscutal suprahumeral sulcus absent; humeral sulcus deep and crenulate; anterior scutellar pit slightly crenulate at bottom, with low median carina; scutellum smooth, rounded, with shallow depression apically and crenulation along margin; propodeum densely rugose-punctate and pubescent, with transverse and longitudinal carinae; mesopleuron punctate and setose on ventral and lateral sides in anterior part, smooth and bare medially; mesepimeral sulcus distinct; metapleuron coarsely sculptured and covered by long setae. Fore and middle legs slender; hind tibia incrassate.

Fore wing. Radial cell close, as long as marginal vein and longer than its width (3 : 5); distant between marginal vein and beginning of basal vein shorter than length of marginal vein (13 : 15) (Fig. 17).

Metasoma. Petiole transverse (15 : 9), coarsely rugose-punctate and with longitudinal carinae on sides; T2–T6 covered by scattered micropunctate and short setae; median furrow of T2 extending to 0.8 of its length; length of T3–T6 together shorter than length of T2 (2 : 3); T7 entirely with dense micropunctuation; sutures between tergites complete and well impressed; sternites densely punctate and pubescent.

VARIATION. Body length 1.7–3.2 mm. Antenna equal to or sometimes a 0.62 as long as of body; A3 equal to or longer than A4; marginal vein as long as radial cell; scutellar disk smooth to entirely pointed; anterior scutellar pits crenulate at bottom to smooth but with low median keel; S6 black to pale brown apically.

MALE. Body length 2.5–2.7 mm. Similar to female, but differs mainly in antennal structures. OOL shorter than POL (6 : 7). Antenna filiform, yellow to brown (Fig. 35); keels developed on A3 and A4: A3 keel presented on apical two-thirds to half of segment length, A4 keel erect, developed along all segment (Fig. 32); A3 equal to or longer than A4; A4 as long as two or two and half of following antennomeres together. Ratios of length to width of antennal segments in dorsal view: 16 : 5; 7 : 4.5; 13 : 5; 12 : 5; 6 : 4.5; 6 : 4.5; 6 : 4.5; 6 : 4.5; 6 : 4.5; 6 : 4.5; 6 : 4.5; 10 : 4.

HOST. Unknown.

DISTRIBUTION. Russia (European part, Eastern Siberia, Far East), East Kazakhstan.

ACKNOWLEDGMENTS

We are very thankful to Dr. Sergey A. Belokobylskij (ZISP) for his help with the first draft of manuscript and constant support, to Dr. Alexandr P. Rasnitsyn (PIN) for the opportunity to prepare insect images and for the providing material, and to Dr. Lubomir Masner (CNCI) for helpful assistance and important advice. We thank Curators David Notton (BMNH), Hege Vårdal (NHRS), Vas Zoltán (HNHM), Igor Malenovský (Moravian Museum, Brno, Czech Republic) and Alexandr Antropov (ZMUM) for their help and consultations. This study was supported by the Russian Foundation for Basic Research (project No. 16–04–00197).

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